CLAIMS

1. A multiple envelope control system for a lift vehicle, the lift vehicle including a platform mounted to a telescoping main boom, the main boom being configured for lift/lower function and telescope function, the multiple envelope control system comprising:

a selector switch for selecting between a plurality of capacity modes including at least a low load mode and a high load mode;

a plurality of sensors strategically positioned on the main boom, the sensors cooperatively defining position zones of the platform; and

a control system communicating with the selector switch and the plurality of sensors, the control system receiving output from the plurality of sensors to determine in which position zone the platform is located, wherein the control system controls an envelope of the platform based on a position of the selector switch.

2. A multiple envelope control system according to claim 1, wherein the control system is configured such that when the selector switch is in the high load mode, the control system selectively prevents at least one of the lift/lower function and the telescope function based on which position zone the platform is located in.

3. A multiple envelope control system according to claim 2, wherein the control system is configured to selectively prevent at least one of the lift/lower function and the telescope function when an angle of the main boom relative to gravity is between +55° and -45°.

4. A multiple envelope control system according to claim 1, further comprising alarm means for activating an alarm when the platform is placed in a position outside of the envelope.

5. A multiple envelope control system according to claim 1, wherein the position zones defined by the plurality of sensors comprise a plurality of angle regions corresponding to an angle of the main boom relative to gravity and a plurality of length regions corresponding to a telescoped length of the main boom.

6. A multiple envelope control system according to claim 5, wherein the position zones defined by the plurality of sensors comprise eight angle regions

corresponding to the angle of the main boom relative to gravity and four length regions corresponding to the telescoped length of the main boom.

7. A multiple envelope control system according to claim 6, wherein the control system is configured permit the main boom lift/lower function and telescope function according to the following schedule, where A-D correspond to the four length regions and R1-R8 correspond to the eight angle regions:

Functions	A	B	C	D
Main Lift UP	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R8
Main Lift Down	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R5, R6, R7, R8
Main Tele Out	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R7, R8	R1, R2, R7, R8
Main Tele In	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R6, R7, R8

8. A multiple envelope control system according to claim 1, wherein the plurality of sensors comprise limit switches.

9. A multiple envelope control system according to claim 8, wherein the position zones defined by the plurality of sensors comprise a plurality of length regions corresponding to a telescoped length of the main boom, and wherein the limit switches comprise first and second multiple capacity switches and first and second main transport switches, the control system being configured to respectively use opposite cam logic with the multiple capacity switches and the main transport switches to determine in which length region the platform is located.

10. A multiple envelope control system according to claim 9, wherein the position zones defined by the plurality of sensors comprise four length regions (A, B, C, D) corresponding to a telescoped length of the main boom, the control system determining which length region the platform is located in according to the following schedule:

	Switch States/Boom Length Regions								
Multiple Cap. Switch #1 Multiple Cap. Switch #2	Off Cam On Cam	Off Cam On Cam	Off Cam On Cam	Disagree Disagree	On Cam Off Cam	On Cam Off Cam	On Cam Off Cam	Disagree Disagree	Disagree Disagree
Control System Conclusion of Multiple Cap Switches	B/A	B/A	B/A	Disagree	C/D	C/D	C/D	Disagree	Disagree
Main Transport Switch #1 Main Transport Switch #2	Off Cam On Cam	Disagree Disagree	On Cam Off Cam	On Cam Off Cam	On Cam Off Cam	Disagree Disagree	Off Cam On Cam	Off Cam On Cam	Disagree Disagree
Control System Conclusion of Main Transport Switches	A/D	Disagree	B/C	B/C	B/C	Disagree	A/D	A/D	Disagree
Control System Conclusion of Main Boom Length	A	A/B	B	B/C	C	C/D	D	Switch Fault	Switch Fault

11. A multiple envelope control system according to claim 1, wherein the control system controls a position of the selector switch according to a sensed load on the platform.

12. A lift vehicle comprising:

a vehicle base;

a tower boom pivotally coupled at one end to the vehicle base;

a telescoping main boom pivotally coupled to the tower boom at an opposite end thereof;

a platform mounted to the telescoping main boom, the telescoping main boom being configured for lift/lower function and telescope function; and

a multiple envelope control system including:

a selector switch for selecting between a plurality of capacity modes including at least a low load mode and a high load mode,

a plurality of sensors strategically positioned on the main boom, the sensors cooperatively defining position zones of the platform, and

a control system communicating with the selector switch and the plurality of sensors, the control system receiving output from the plurality of sensors to determine in which position zone the platform is located, wherein the control system controls an envelope of the platform based on a position of the selector switch.

13. A method of controlling an envelope of a platform in a lift vehicle, the lift vehicle including the platform mounted to a telescoping main boom, the main boom being configured for lift/lower function and telescope function, the platform further including a selector switch for selecting between a plurality of capacity modes including

at least a low load mode and a high load mode, a plurality of sensors strategically positioned on the main boom and cooperatively defining position zones of the platform, and a control system communicating with the selector switch and the plurality of sensors, the method comprising:

(a) the control system receiving output from the plurality of sensors and determining in which position zone the platform is located; and

(b) controlling an envelope of the platform based on a position of the selector switch by selectively preventing at least one of the lift/lower function and the telescope function based on which position zone the platform is located in.

14. A method according to claim 13, wherein step (b) is practiced when the selector switch is in the high load position.

15. A method according to claim 14, wherein step (b) is practiced by selectively preventing at least one of the lift/lower function and the telescope function when an angle of the main boom relative to gravity is between +55° and -45°.

16. A method according to claim 13, further comprising activating an alarm when the platform is placed in a position outside of the envelope.

17. A method according to claim 13, wherein the platform is supported by a jib coupled with the main boom, the method further comprising preventing swing of the jib when the selector switch in is the high load position.

18. A method according to claim 13, further comprising activating an alarm when the high load mode is selected and the platform is positioned outside of the envelope.

19. A method according to claim 13, further comprising positioning the sensors on the main boom such that the position zones comprise a plurality of angle regions corresponding to an angle of the main boom relative to gravity and a plurality of length regions corresponding to a telescoped length of the main boom.

20. A method according to claim 19, wherein the position zones defined by the plurality of sensors comprise eight angle regions corresponding to the angle of the main boom relative to gravity and four length regions corresponding to the telescoped length of the main boom.

21. A method according to claim 20, further comprising permitting the main boom lift/lower function and telescope function according to the following schedule, where A-D correspond to the four length regions and R1-R8 correspond to the eight angle regions:

Functions	A	B	C	D
Main Lift UP	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R8
Main Lift Down	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R5, R6, R7, R8
Main Tele Out	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R7, R8	R1, R2, R7, R8
Main Tele In	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R4, R5, R6, R7, R8	R1, R2, R3, R6, R7, R8

22. A method according to claim 13, further comprising:

positioning the sensors on the main boom such that the position zones comprise a plurality of length regions corresponding to a telescoped length of the main boom, the sensors comprising first and second multiple capacity switches and first and second main transport switches; and

respectively using opposite cam logic with the multiple capacity switches and the main transport switches to determine in which length region the platform is located.

23. A method according to claim 22, wherein the position zones defined by the plurality of sensors comprise four length regions (A, B, C, D) corresponding to a telescoped length of the main boom, the method further comprising determining which length region the platform is located in according to the following schedule:

	Switch States/Boom Length Regions								
Multiple Cap. Switch #1 Multiple Cap. Switch #2	Off Cam On Cam	Off Cam On Cam	Off Cam On Cam	Disagree Disagree	On Cam Off Cam	On Cam Off Cam	On Cam Off Cam	Disagree Disagree	Disagree Disagree
Control System Conclusion of Multiple Cap Switches	B/A	B/A	B/A	Disagree	C/D	C/D	C/D	Disagree	Disagree
Main Transport Switch #1 Main Transport Switch #2	Off Cam On Cam	Disagree Disagree	On Cam Off Cam	On Cam Off Cam	On Cam Off Cam	Disagree Disagree	Off Cam On Cam	Off Cam On Cam	Disagree Disagree
Control System Conclusion of Main Transport Switches	A/D	Disagree	B/C	B/C	B/C	Disagree	A/D	A/D	Disagree
Control System Conclusion of Main Boom Length	A	A/B	B	B/C	C	C/D	D	Switch Fault	Switch Fault